

Pesticide-Related Illnesses and Injuries Reported by Physicians in California
Summarized by Activity and Type of Illness/Injury¹
1999

OCCUPATIONAL²

ACTIVITY ³	EQUIPMENT ⁴ / EXPOSURE MECHANISM ⁵	ILLNESS/INJURY TYPE & RELATIONSHIP								TOTAL	
		SYSTEMIC ⁶		EYE ⁶		SKIN ⁶		EYE/SKIN ⁶			
		Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷
Mixer/Loader	Aerial	2	1	0	0	0	0	0	0	2	1
	Ground	2	0	1	0	2	1	0	0	5	1
	Hand	1	0	5	0	0	0	0	0	6	0
	Chamber (Fumigant)	0	0	1	0	0	0	0	0	1	0
	Other/Unknown	13	1	31	2	1	1	1	0	46	4
	Other/Unknown (Fumigant)	1	0	0	0	0	0	0	0	1	0
Applicator	Ground	4	11	0	1	10	7	1	0	15	19
	Ground (Fumigant)	0	1	0	0	0	0	0	0	0	1
	Hand	16	9	21	4	9	11	1	0	47	24
	Hand (Fumigant)	1	0	1	0	0	1	0	0	2	1
	Chamber	2	0	1	0	0	0	0	0	3	0
	Chamber (Fumigant)	0	1	0	0	0	0	0	0	0	1
	Tarp (Fumigant)	1	1	0	0	0	0	0	0	1	1
	Other/Unknown	19	6	37	1	13	7	2	0	71	14
Mechanical Work on Contaminated Equipment		9	2	9	0	1	0	1	0	20	2
Packer/Processor (Commodity)	Exposed to Drift	81	0	0	0	0	0	0	0	81	0
	Exposed to Residue	0	1	0	0	0	3	1	2	1	6
	Other/Unknown Exposure	1	1	1	0	0	1	0	0	2	2
Field Worker	Exposed to Drift	10	29	0	1	0	2	0	0	10	32
	Exposed to Residue	23	17	0	7	0	32	0	3	23	59
	Other/Unknown Exposure	6	2	0	0	2	0	0	0	8	2

OCCUPATIONAL (continued)

ACTIVITY ³	EQUIPMENT ⁴ / EXPOSURE MECHANISM ⁵	ILLNESS/INJURY TYPE & RELATIONSHIP								TOTAL	
		SYSTEMIC ⁶		EYE ⁶		SKIN ⁶		EYE/SKIN ⁶			
		Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷
Routine Indoor Activity	Exposed to Drift	29	9	2	0	0	0	0	0	31	9
	Exposed to Residue	51	20	2	1	2	0	0	0	55	21
	Other/Unknown Exposure	7	10	2	0	0	2	0	0	9	12
Routine Outdoor Activity	Exposed to Drift	23	2	0	0	0	0	1	0	24	2
	Exposed to Residue	0	1	0	0	0	1	0	0	0	2
	Other/Unknown Exposure	0	2	1	0	0	0	0	0	1	2
Manufacture/Formulation		0	0	0	0	1	0	0	0	1	0
Transport/Storage/Disposal		14	1	20	2	5	1	1	0	40	4
Emergency Response		12	1	0	0	0	0	0	0	12	1
Other Occupational Activity		31	11	5	3	7	2	1	1	44	17
Unknown Occupational Activity		1	0	0	0	1	0	0	0	2	0
Occupational Totals		360	140	140	22	54	72	10	6	564	240

NON-OCCUPATIONAL² (less fully reported than occupational cases)

ACTIVITY ³	EQUIPMENT ⁴ / EXPOSURE MECHANISM ⁵	ILLNESS/INJURY TYPE & RELATIONSHIP								TOTAL	
		SYSTEMIC ⁶		EYE ⁶		SKIN ⁶		EYE/SKIN ⁶			
		Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷	Def/Pro ⁷	Pos ⁷
Mixer/Loader	Other/Unknown	4	0	0	0	0	0	0	0	4	0
Applicator	Hand	8	6	4	0	4	0	0	0	16	6
	Other/Unknown	8	0	1	0	1	0	0	0	10	0
	Other/Unknown Fumigant	1	0	0	0	0	0	0	0	1	0
Mechanical Work on Contaminated Equipment		0	2	0	0	0	0	0	0	0	2
Routine Indoor Activity	Exposed to Drift	99	86	11	1	0	2	0	0	110	89
	Exposed to Residue	23	8	1	1	0	5	0	0	24	14
	Other/Unknown Exposure	13	0	0	0	1	0	0	0	14	0
Routine Outdoor Activity	Exposed to Drift	33	9	6	0	0	0	0	0	39	9
	Exposed to Residue	2	1	0	0	0	2	0	0	2	3
	Other/Unknown Exposure	2	1	0	0	0	0	1	0	3	1
Transport/Storage/Disposal		1	0	0	0	0	0	0	0	1	0
Other Non-Occupational Activity		37	5	4	0	0	0	1	0	42	5
Unknown-Non-Occupational Activity		0	2	0	0	0	0	0	0	0	2
Non-Occupational Totals		231	120	27	2	6	9	2	0	266	131
1999 Totals		591	260	167	24	60	81	12	6	830	371

1. **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

“Pesticide-related” means a determination was made that the illness/injury was definitely, probably or possibly related to pesticide exposure (see definitions below).

2. **Occupational/Non-occupational:** The relationship between the illness/injury and the individual’s work.

Occupational : Work related. The individual was on the job at the time of the incident. This includes both paid employees and volunteers working in similar capacity to paid employees.

Non-Occupational : Not work related. The individual was not on the job at the time of the incident. This category includes individuals while on the way to or from work (before the start or after the end of their workday).

3. **Activity:** Activity of the exposed individual at the time of exposure

Mixer/Loader	: Mixes and/or loads pesticides. This includes: (1) removing a pesticide from its original container, (2) transferring the pesticide to a mixing or holding tank, (3) mixing pesticides prior to application, (4) driving a nurse rig, or (5) transferring the pesticide from a mixing/holding tank or nurse rig to an application tank.
Applicator	: Applies pesticides by any method or conducts activities considered ancillary to the application (e.g., cleans spray nozzles in the field).
Mechanical Work on Contaminated Equipment	: Maintains (e.g. cleans, repairs or conducts maintenance) pesticide-contaminated equipment used to mix, load or apply pesticides as well as the protective equipment used by individuals involved in such activities. This excludes the following: 1) maintenance performed by applicators on their equipment incidental to the application (classified as 'Applicator'); 2) maintenance performed by mixer/loaders on their equipment incidental to mixing and loading (classified as 'Mixer/Loader'); and 3) decontamination by HAZMAT teams (classified as 'Emergency Response').
Packer/Processor	: Handles (packs, processes or retails) agricultural commodities from the packing house to the final market place. Field packing of agricultural commodities is classified as 'Field Worker'.
Field Worker	: Works in an agricultural field performing tasks such as advising, scouting, harvesting, thinning, irrigating, driving tractor (except as part of an application), field packing, conducting cultural work in a greenhouse, etc. Researchers performing similar tasks in an agricultural field are also included.
Routine Indoor Activity	: Conducts activities in an indoor environment with minimal expectation for exposure to pesticides. This includes people in offices and businesses, residential structures, etc. who are not handling pesticides.
Routine Outdoor Activity	: Conducts activities in an outdoor environment with minimal expectation for exposure to pesticides. This excludes field workers in agricultural fields. This includes gardeners who are not handling pesticides.
Manufacture/Formulation	: Manufactures, processes or packages pesticides. This includes "mixing" if it is done in a plant for application elsewhere.
Transport/Storage/Disposal	: Transports or stores pesticides between packaging and preparation for use. This includes shipping, warehousing and retailing as well as storage by the end-user prior to preparation for use. Disposal of unused pesticides is also included in this activity. This excludes driving a nurse rig to an application site.
Emergency Response	: Emergency response personnel (Police, fire, ambulance and HAZMAT personnel) responding to a fire, spill, accident or any other pesticide incident in the line of duty.
Other Activity	: Activity is not adequately described by any other activity category. This includes: 1) being inside a vehicle; 2) dog groomers not handling pesticides; 3) individuals handling pesticide treated wood; 4) two or more activities with potential for pesticide exposure.
Unknown Activity	: Activity is not known.

4. **Equipment:** Type of equipment used for an application.

Aerial	: Aerial application equipment (fixed wing or helicopter).
Ground	: Ground application equipment.
Hand	: Hand-held application equipment that propels a pesticide from a reservoir.
Chamber	: An enclosed, sealed chamber designed specifically for fumigating or sterilizing the contents of the chamber.
Tarp	: Tarp placed over a commodity, structure, or field that is designed to restrict a fumigant to the application site.
Other	: Any application methodology not described above.
Unknown	: The type of application equipment is not known.

Note: : Equipment with a 'Fumigant' designation involves only fumigants.

5. **Exposure:** Characterization of how an individual came in contact with a pesticide

Drift	: Spray, mist, fumes, or odor carried from the target site by air. Drift must be related to an application or mix/load activity.
Residue	: The part of a pesticide that remains in the environment for a period of time following an application or drift. This includes odor after the completion of an application.
Other	: Other route of exposure.
Unknown	: Route of exposure is not known

6. **Type of Illness:** Categorization of the type of symptoms experienced.

Systemic	: Any health effects not limited to the skin and/or eye. Cases involving multiple illness symptom types including systemic symptoms are included in the systemic category.
Eye	: Health effects involving only the eyes. This excludes outward physical signs (miosis and lacrimation) related to effects on internal bodily systems. These signs are classified under 'Systemic'.
Skin	: Health effects involving only the skin.
Eye/Skin	: Health effects involving the eye and skin.

7. **Relationship:** Degree of correlation between pesticide exposure and resulting symptomatology.

DEFinite	: High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.
PRObable	: Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.
POSSible	: Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

Whom to Contact:

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About the Pesticide Illness Surveillance Program Data

Pesticide-related illnesses have been tracked within the state of California for nearly 50 years. The California Environmental Protection Agency, Department of Pesticide Regulation (DPR) maintains a surveillance program which records human health effects of pesticide exposure. Information on adverse effects from pesticide products, whether elicited by the active ingredients, inert ingredients, impurities, or breakdown products are documented by the Pesticide Illness Surveillance Program (PISP). This program maintains a database, which is utilized for evaluating the circumstances of pesticide exposures resulting in illness. This database is consulted regularly by staff who evaluate(s) the effectiveness of the DPR pesticide safety programs and recommend changes when appropriate.